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M8000

Wireless 802.11 a/b/g Outdoor AP

- 2.4GHz / 5GHz
- 54Mbps
- 802.11 a/b/g
- MESH Function

PRODUCT DESCRIPTION

EnGenius Mesh AP is designed with IEEE802.11a/b/g standards and addressed on providing high performance mesh network. The product encased in the IP-65 protection enclosure and delivers the maximum scalability, high reliability at outdoor environment. Compared with expensive T1/E1 leased lines, the Mesh network offers a cost-effective last-mile connection.

EnGenius Mesh AP provides wireless connection over self-adaptation mesh backhaul (5GHz). The mesh AP can operate at 2.4GHz for long range interference. The detachable antenna design allows users to use various antennas for different deployment.

The M8000, including advanced AODV (Ad-hoc On-demand Distance Vector) protocol, is the industry and scalable mesh routing algorithm. It allows data to be transferred with the optimal path. WAN interface for Internet connection with Gateway mode, power over Ethernet for both Gateway mode and Relay mode.

EnGenius Mesh AP provides the highest security mechanism to protect data information over wireless. The security feature include AES backhaul link, WPA2 client access, SSL for web management. To simplify the administration task throughout the large area, this product also provides centralized management software. This software is built based on SNMP protocol and can be installed in computer.

M8000 Datasheet Version 101110

*Theoretical wireless signal rate based on IEEE standard of 802.11 a, b, g, n chipset used. Actual throughput may vary.Network conditions and environmental factors lower actual throughput rate.
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BUSINESS CLASS
M8000

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Features	Benefits
Dual Radio for independent Backhaul and local access	Allow operators to set up at both 2.4GHz for long range and 5GHz for backhaul to reduce the frequency interference
Self Configuration and Healing	Automatically search and link with gateway AP and other nearest node Mesh AP for Ease of Deployment & Management
EnGenius Business Class High Power Technology	Get more coverage and distance to save the installation fee
Wide temperature range and robust mechanical design (IP65)	Delivers reliable, top performance in the most demanding environments to Avoid water invaded and weather corroded
Power over Ethernet (PoE)	Easy installation and cost-effective
Support Multiple SSID for client access mode	Distinguish separate networks within the same wireless space to provide secure connection
Support VLAN pass-through (Wired, Wireless)	Reduce the size of each broadcast domain, which in turn reduces network traffic and increases network security
Support 802.1x (EAP-TLS/TTLS/SIM/PEAP), 802.11i (WPA/WPA2, AES), VPN pass-thru mechanisms	Provide mutual authentication (Client and dynamic encryption keys to enhance security
Hide SSID	Avoids unallowable users sharing bandwidth, increases efficiency of the network
Support MAC Address access control list	Ensures secure network connection
Support WMM Extension	Improve the user experience for audio, video, and voice applications by prioritizing data traffic
Bandwidth control	Enables operators to specify the maximum line bandwidth that a particular transfer operation can use
Support SNMP v2c/v3	Allow users to operate with existing network management tools
Centralized management software	Easy to manage volume Mesh AP via central control system to save the management cost

TECHNICAL SPECIFICATION	
> Hardware Specification	
MCU	Intel IXP425, 533MHz
RF	Atheros AR5413
Memory	64MB SDRAM
Flash	16MB
Physical Interface	One 10/100 Fast Ethernet RJ-45
Power Requirements	Active Ethernet (Power over Ethernet, IEEE802.3af)- 48 VDC/0.375A
Regulation Certifications	FCC Part 15/UL, ETSI 300/328/CE
> RF Specification	

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<table>
<tr><td>Frequency Band</td><td>802.11a:
5.15~5.35GHz,
5.47~5.725GHz, 5.725~5.825GHz
802.11b/g:
U.S., Europe and Japan product covering 2.4 to 2.484 GHz, programmable for different country regulations</td></tr>
<tr><td>Media Access Protocol</td><td>Carrier sense multiple access with collision avoidance (CSMA/CA)</td></tr>
<tr><td>Modulation Technology</td><td>OFDM: BPSK, QPSK, 16-QAM, 64-QAM
DBPSK, DQPSK, CCK</td></tr>
<tr><td>Operating Channels</td><td>802.11b/g
11 for North America, 14 for Japan, 13 for Europe
802.11a
US/Canada:12 non-overlapping channel (5.15~5.35GHz, 5.725~5.825GHz)
Europe:19 non-overlapping channel (5.15~5.35GHz, 5.47~5.825GHz)
Japan:4 non-overlapping channel (5.15~5.25GHz)
China:5 non-overlapping channel (5.725~5.85GHz)</td></tr>
<tr><td>Receive Sensitivity (Typical)</td><td>
<table>
<tr><th>802.11a</th><th>802.11g</th><th>802.11b</th></tr>
<tr><td>-88dBm @ 6Mbps
-70dBm @ 54Mbps</td><td>-90 dBm @ 6Mbps
-74 dBm @ 54Mbps</td><td>-95 dBm @ 1Mbps
-90 dBm @ 11Mbps</td></tr>
</table>
</td></tr>
<tr><td>Antenna *2</td><td>2 x N-type (female) connector dual band omni external antenna</td></tr>
<tr><td>Available transmit power</td><td>
<table>
<tr><th>Frequency</th><th>FCC</th><th>ETSI</th></tr>
<tr><td>4.92~5.08 GHz</td><td>17 dBm @6~36Mbps
16 dBm @48Mbps
15 dBm @54Mbps</td><td>20 dBm @6~24Mbps
18 dBm @36Mbps
16 dBm @48Mbps
15 dBm @54Mbps</td></tr>
<tr><td>5.18~5.32 GHz</td><td></td><td>20 dBm @6~24Mbps
18 dBm @36Mbps
16 dBm @48Mbps
15 dBm @54Mbps</td></tr>
<tr><td>5.26~5.32 GHz</td><td>20 dBm @6~24Mbps
18 dBm @36Mbps
16 dBm @48Mbps
15 dBm @54Mbps</td><td></td></tr>
<tr><td>5.52~5.70 GHz</td><td></td><td>19 dBm @6~24Mbps
17 dBm @36Mbps
15 dBm @48Mbps
14 dBm @54Mbps</td></tr>
<tr><td>5.745~5.825GHz</td><td>18 dBm @6~24Mbps
16 dBm @36Mbps
14 dBm @48Mbps
13 dBm @54Mbps</td><td>18 dBm @6~24Mbps
16 dBm @36Mbps
14 dBm @48Mbps
13 dBm @54Mbps</td></tr>
</table>
</td></tr>
</table>

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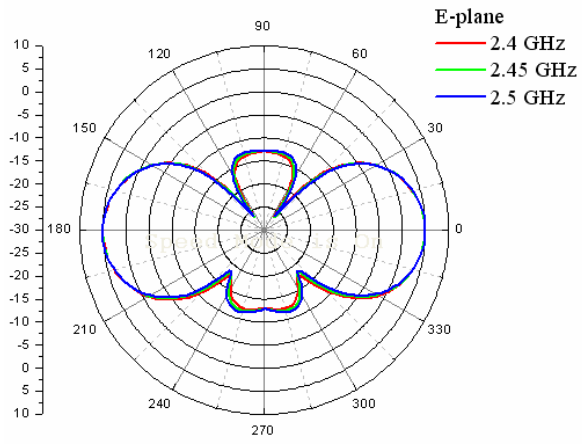
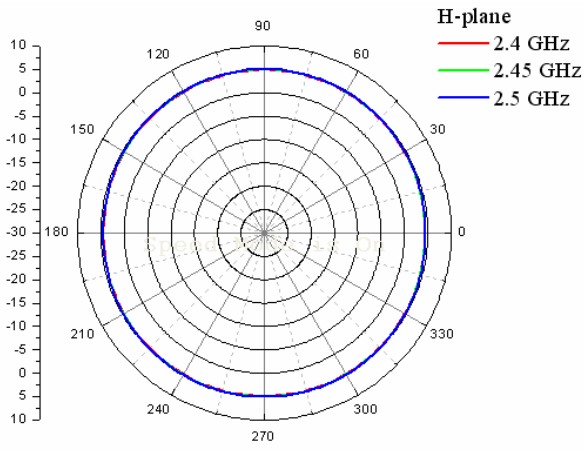
		2.412~2.462 GHz (IEEE802.11g)	25 dBm @6~24Mbps 23 dBm @36Mbps 22 dBm @48Mbps 21 dBm @54Mbps	25 dBm @6~24Mbps 23 dBm @36Mbps 22 dBm @48Mbps 21 dBm @54Mbps
		2.412~2.462 GHz (IEEE802.11b)	25 dBm @1~11Mbps	25 dBm @1~11Mbps

> Antenna Specifications

Electrical Properties	Impedance	50 ohm
	Frequency Range	0~6 GHz
	V.S.W.R	≦1.5
	Working Voltage	≦1000 Vrms
	Dielectric Withstanding	≦2500 Vrms
	Voltage Insulation Resistance	≧5000 Megohms
	Contact Resistance	Center contact : 1.0 Milliohms (Max) Outer contact : 0.2 Milliohms (Max)
Environmental Ratings	Operating Temperature	-65°C ~ +165°C
Material Specifications	Material data	Material
	Body	Brass
	Center Contact	Brass
	Insulator	Teflon or Delrin

> Antenna Radiation Pattern





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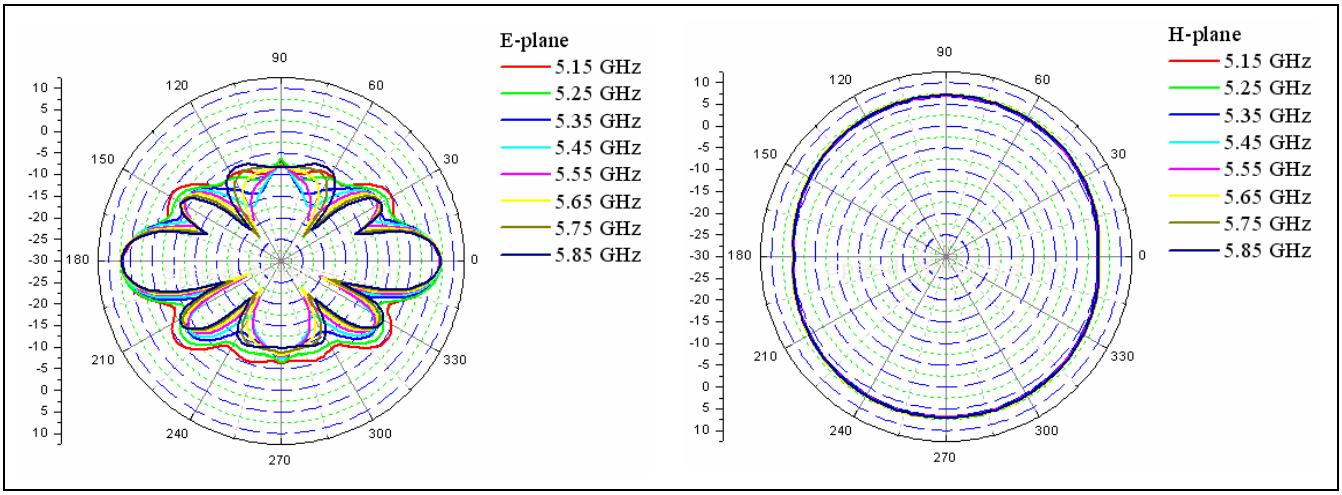

SOFTWARE FEATURES	
> General	
Topology	Infrastructure
Protocol / Standard	IEEE 802.3 (Ethernet) IEEE 802.3u (Fast Ethernet) IEEE 802.11a (5GHz WLAN) IEEE 802.11b/g (2.4GHz WLAN) RFC 768 UDP RFC 791 IP RFC 792 ICMP RFC 793 TCP RFC 826 ARP RFC 1034, 1035 DNS RFC 1058 RIP RFC 1119 SNTPv2 RFC 1541 / 2131 / 3046 DHCP client / Server RFC 2068 / 2616 HTTP RFC 2516 PPPoE RFC 2865,2866 RADIUS
Operation Mode	MESH Gateway, Client Relay
LAN	- DHCP Client - DHCP Relay
IPV4	- Multicast - Routing
Wireless	- Auto Channel Selection (Setting varies by Country) - Transmission Rate 11a/g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps 11b : 11, 5.5, 2, 1 Mbps - Distance Control (Ack timeout)
Security	- Authentication : 802.11i (WPA, WPA2)

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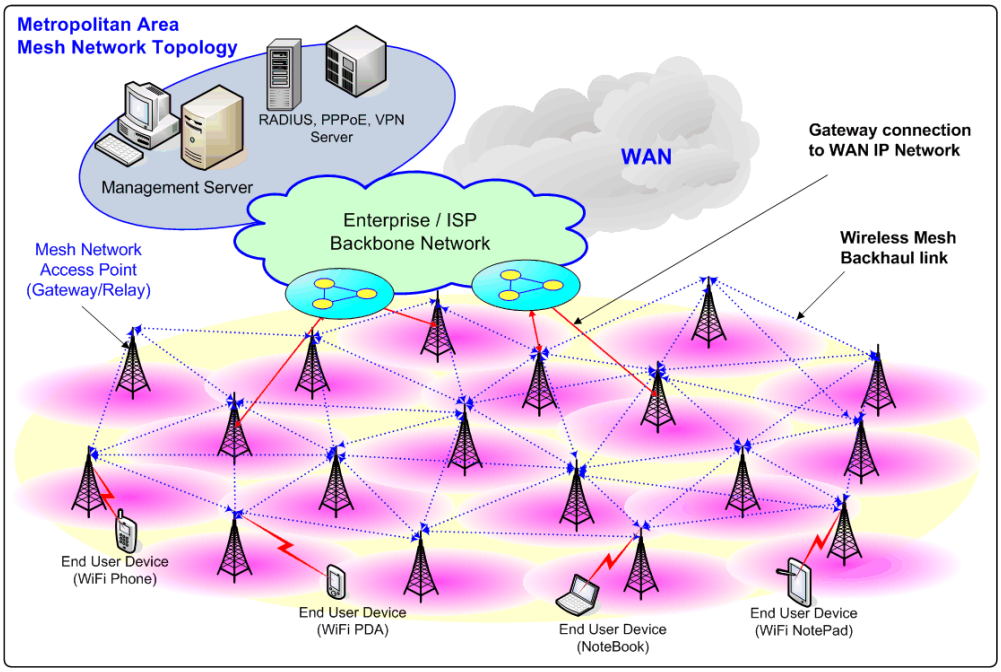
	802.1x (including EAP-TLS/TTLS) - Encryption : Open, WEP-64/128, TKIP, AES - MAC address access control list - MSSID Support in client access mode - Hidden SSID - VLAN pass-through
QoS	WMM
> Management	
Configuration	Web-based configuration (HTTP)/HTTPS/SSH
Network Windows Management Utility	- MESH AP discovery - MESH AP status - MESH AP setup, upgrade, reboot - User status, activity
Firmware Upgrade	Upgrade firmware via utility (HTTP)/TFTP
Administrator Setting	Administrator password change
Reset Setting	Reboot and Reset to Factory Default
System monitoring	Status, Statistics and Event Log
SNMP	V2c, V3 (MIB)
Alarms	Configuration Alarms

APPLICATION



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ENVIRONMENTAL AND PHYSICAL	
Temperature Range	Operating: -20°C~70°C Storage: -30°C to 80°C
Humidity (non-condensing)	0% ~ 90% typical
Dimensions	260mm (L) x 175mm (W) x 65mm (H)
Weight	450g

PACKAGE CONTENT
► 1 x 802.11a/b/g Layer-2 MESH AP (M8000)
► 1 x PoE Injector
► 1 x Power Adaptor
► 1 x Mounting kit
► 1 x 1.8m Grounding Cable
► 2 x Dual Band Antennas
► 1 x CD-ROM with User's Manual, NMS and Reset Tool

Contact

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Check www.engeniustech.com.au for your contact information

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